REMARKS

In order to more particularly point out and distinctly claim the subject matter which Applicants regard as the invention, Claim 1 has been amended to state that the epoxy group of the porous carrier and part of the hydroxyl groups of the polysaccharide derivative are chemically bonded to each other. No new matter has been added.

Claims 1-8 have been rejected under 35 USC 102(b) as being anticipated by or, in the alternative, under 35 USC 103(a) as obvious over Okamoto et al. Claims 1-8 also have been rejected under 35 USC 102(b) as being anticipated by or, in the alternative, under 35 USC 103(a) as obvious over Onishi. Applicants respectfully traverse these grounds of rejection and urge reconsideration in light of the following comments.

As pointed out previously, the presently claimed invention is directed to a separating agent for enantiomeric isomers which comprises a polysaccharide derivative carried on a porous carrier. The porous carrier has an epoxy group and the epoxy group of the porous carrier and part of the hydroxyl groups of the polysaccharide derivative are chemically bonded to each other. The separating agent defined by the currently presented claims exhibits both a high optical resolving power and a high solvent resistance to overcome problems associated with conventional polysaccharide separating agents. Once again it is respectfully submitted that the prior art cited by the Examiner does not disclose the presently claimed invention.

Both the Okamoto et al and Onishi references are owned by the assignee of the present application. The Okamoto et al reference is directed to a separation column having a stable frit and a separation method of an optical isomer using the column. This reference discloses that a chemical bond can be formed between a silica gel carrier and a polysaccharide derivative but there is no teaching or suggestion in this

reference of providing an epoxy group on the silica gel so there certainly is no disclosure with respect to a carrier having an epoxy group which is chemically bonded with part of the hydroxyl groups of a polysaccharide derivative.

On page 3 of the outstanding Office Action, the Examiner states that Okamoto et al discloses an epoxy-type structure in paragraph [0044]. However, paragraph [0044] only discloses racemates or enantiomeric isomers that are optically separated with the separating agent disclosed there. Nothing in paragraph [0044] of this reference is directed to a separating agent. Enclosed herewith for the Examiner's benefit is a computer translation of page 5 of the Okamoto et al reference with the English words written under the remaining Japanese words. Therefore, Okamoto et al has no disclosure of an epoxy group being provided on a carrier.

The Onishi reference discloses a polysaccharide derivative chiral stationary phase which is used in the chromatographic separation of isomers. The polysaccharide derivative can be formed by reacting a polysaccharide at a hydroxyl group with an epoxy group. This is what is discussed at paragraph [0013] of this reference. There is no discussion regarding a porous carrier having an epoxy group. Applicants readily admit that it is well known to form a polysaccharide derivative by reacting a polysaccharide at a hydroxyl group with an epoxy compound. However, the present invention requires that the porous carrier have an epoxy group and that the porous carrier be reacted with a polysaccharide derivative through an epoxy group provided on the porous carrier and a hydroxy group of the polysaccharide derivative. Therefore, it is respectfully submitted that Onishi clearly does not disclose the presently claimed invention.

The Examiner is respectfully requested to reconsider the present application and to pass it to issue.

Respectfully submitted,

Terryence F. Chapman

TFC/smd

FLYNN, THIEL, BOUTELL & TANIS, P.C.
2026 Rambling Road
Kalamazoo, MI 49008-1631
Phone: (269) 381-1156
Fax: (269) 381-5465

David G. Boutell Reg. No. 25 072
Terryence F. Chapman Reg. No. 32 549
Mark L. Maki Reg. No. 36 589
Liane L. Churney Reg. No. 40 694
Brian R. Tumm Reg. No. 36 328
Heon Jekal Reg. No. 64 219
Eugene J. Rath III Reg. No. 42 094
Dale H. Thiel Reg. No. 24 323
Sidney B. Williams, Jr. Reg. No. 24 949

Encl: Computer Translation of Page 5 of Okamoto et al
Postal Card

136.07/05

5 ページ

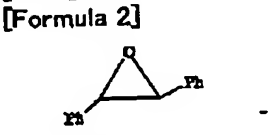
[0041]It is made to be the same as that of Examples 1 and 2 instead of a fused silica capillary column 75 example 3 micrometers in inside diameter, and 18.5 cm in length except using a fused silica capillary column 100 micrometers in inside diameter, and 25.0 cm in length. The capillary column which has the fritto in which the bulking agent is held was obtained.

[0042]The capillary column obtained in example 4 Examples 2 and 3 is used. and it is Prince capillary electrophoresis instrument. System (Lauerlabs. Emmen, The Metherlands), Optical resolution was performed by the following condition about 7 sorts of racemate (a) – (g) shown below, using JASCO CE 971 UV Intelligent (made by Jasco Corp.) as a detector. The result is shown in Table 1. A separation factor (alpha) is defined by the following formulas in Table 1.

[0043]The retention coefficient of alpha=k_2' / optical isomer in which 'the retention coefficient of the optical isomer in which k_1' is held weaklier here, and k_2' are held more strongly is shown k_1.

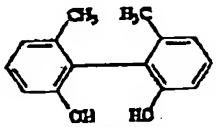
[0044]

[Formula 2]



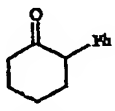
ラセミ体 (a)

racemate (a)



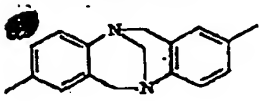
ラセミ体 (b)

racemate (b)



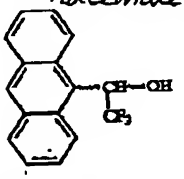
ラセミ体 (c)

racemate (c)



ラセミ体 (d)

racemate (d)



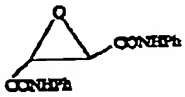
ラセミ体 (e)

racemate (e)

$Co(acac)_3$

ラセミ体 (f)

racemate (f)



ラセミ体 (g)

racemate (g)

[0045]mobile phase: — hexane/isopropanol =9/1 (v/v)

Detection :UV214nm pump liquid sending (pressure constant method for BET method): 20bar [0046]

[Table 1]

	分離係数 (α) separation factor (α)	
	実施例2のカラム column of Example 2	実施例3のカラム column of Example 3
ラセミ体(a) racemate (a)	1.61	1.47
ラセミ体(b) racemate (b)	1.20	1.07
ラセミ体(c) racemate (c)	1.25	1.26
ラセミ体(d) racemate (d)	1.42	1.36
ラセミ体(e) racemate (e)	1.22	1.17
ラセミ体(f) racemate (f)	1.50	1.53
ラセミ体(g) racemate (g)	1.35	1.31

[0047]

[Effect of the Invention]According to this invention, reappearance is good and the column for separation with the fritto which is rich in stability can be manufactured simply.

[Translation done.]